

Notice of Allowability

Application No.

10/072,440

Examiner

Stephen Rosasco

Applicant(s)

DULMAN, H. DANIEL

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to filing.
2. ☒ The allowed claim(s) is/are 1-96.
3. ☒ The drawings filed on 05 February 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 3 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No. <u>2/5/02</u> | 7 <input type="checkbox"/> Examiner's Amendment/Comment |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

Detailed Action

The following is an examiner's statement of reasons for allowance: the claimed invention is distinguished over the prior art of record in that the prior art does not teach a radiation patterning tool comprising: a feature pattern having a periphery and configured to impart a first rotation in phase to a wavelength of light passing through the feature pattern; and a rim along a portion of the feature pattern periphery but not along an entirety of the feature pattern periphery; the rim being configured to impart a second rotation in phase to the wavelength of light when the wavelength passes through the rim; the second rotation in phase being from about 170 degrees to about 190 degrees relative to the first rotation in phase.

The cited prior art to Blatchford, JR. et al. provides an attenuated phase-shift mask (APSM) manufactured using industry-known techniques and equipment such as a MEBES 4500 electron-beam exposure system. The APSM is used in a standard photolithography tool with conventional photoresist processing. Blatchford, JR. et al. states that according to conventional techniques, square or rectangular shaped apertures on a photomask are used to form contact holes in a photoresist pattern. The contact holes formed in a photoresist pattern, using the square-shaped apertures on the mask, are generally circular at the wafer level.

In contrast, Blatchford, JR. et al. provides an APSM which includes "shape-engineered" contact openings formed of various different shapes. The contact openings in the APSM according to the present invention may be diamond-shaped, star-shaped, cross-shaped or one of various other non-rectangular, non-circular shapes which include multiple sharp corners or vertices. However, these shapes do not meet the criteria of those in the claimed invention.

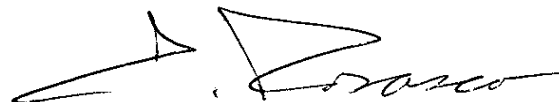
Application/Control Number: 10/072,440
Art Unit: 1756

Page 3

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Rosasco whose telephone number is (703) 308-4402.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661. The number for all Faxes **(703) 872-9306**.

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized, elongated initial 'S'.

S. Rosasco
Primary Examiner
Art Unit 1756

S. Rosasco
11/6/03